

Letter from Clarence J. Blake to Alexander Graham Bell, August 5, 1874, with transcript

Copied from a letter to Prof. A. Graham Bell, Brantford, Ontario, from Clarence J. Blake.
Boston, Hotel Berkeley, Aug. 5th, 1874. My dear Sir,

Many thanks for your favor enclosing the photographs of vibrations. I am very glad to see that you are getting on so well with the experiments, and shall join you therein, practically, instead of theoretically so soon as I get through with this months work. I shall probably remain in town until Sept. 10th and return Sept. 24th or 26th and shall not resume practice probably until Oct. 15th so that we can have time to work together. A style which would vibrate to any pitch must of necessity be one in which the weight is so nearly a minus quantity in the problem as to exact no influence on the vibrations conveyed through the ossicula. The membrana tympani and ossicula you will find to vibrate to any pitch of the human voice and to a pitch both above and below it. I propose the following experiment as a further proof of the vibration value of the different portions of the membrana tympani and ossicula, and confirmatory of the experiments which I made year before last on this same subject, viz fastening the style not only to the incus but also to the malleus and to different portions of the membrana tympani. The membr. tymp. vibrates in different degrees according to the difference in tension of the various portions. The membrane for purpose of experiment may be divided into segments as here shown, a. inferior, b. posterior, c. anterior, d. anterior-superior segment, on the fold, e. post-superior segment on the fold. These segments will

meatus a. malleus b. membr. tymp.

2 be found to possess different degrees of tension and to vibrate accordingly.

When you return I shall be prepared to give you the experiments made by Mach, Kessel and others within the last two years which will save you some trouble in going over already

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experimented ground. The experiments on vibration which you have so successfully commenced are however quite new and the photographs from your plates which I showed at the meeting of the Otological Society attracted considerable attention. We can also determine the rate of vibration in the second with the clock work recorder where Wolf does not give them in his work on "Speech and the Ear," and hope that we shall be able to make some positive contributions to science in this field. Please let me hear from you further at your convenience and any information which I can give either by sending books or otherwise I shall be happy to send.

Sincerely yours, Clarence J. Blake. Prof. A. Graham Bell, Brantford, Ontario. P. S. After the experiments on recording vibrations with the style I propose — 1. to observe the length of the vibrations under a micrometer glass with the microscope and 2. recording vibrations on a sensitive plate by a light ray reflected from a speculum metal surface attached to different portions of the membrana tympani and ossicula and as two heads are better than one hope that 3 we may take them up together. If convenient can you do me the favor to get tracings with the same tone by fastening the style 1. to the head of the malleus, 2. to the end of the long process of the malleus, 3. to the body of the incus, 4. to the end of the long process of the incus, as I should like to see if it will agree with the results of the experiments which I made for a paper read before the last meeting of the Otological Society.

Sincerely yours, Clarence J. Blake.

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Singing into a human ear, Dr. Bell recorded this sound wave on smoked glass. Hoping to make photographs of sound-wave patterns to help teach his deaf pupils to speak, Dr. Bell secured a human ear through a friend, Dr. Clarence J. Blake, and attached a straw to it. When he sang into the ear, the straw recorded the vibrations of the eardrum on smoked

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glass. The wave pattern shown here is that of the vowel “ah” sung to G, as indicated in the notation signed with Bell's initials.

(Bell Museum, Panel 114 lower)

57-A Sent to Bell Museum 5/5/61